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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,153	09/30/2003	Glen H. Handlogten	ROC920030061US1	6418

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EXAMINER	
BARON, HENRY	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/676,153	HANDLOGTEN ET AL.	
	Examiner	Art Unit	
	HENRY BARON	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-10 and 12-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-10 and 12-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 3– 6 are rejected under 35 U.S.C. 102(e) as being unpatentable over Hassan-Ali et al (U.S. Patent Application Publication 2004/0081167), hereafter Hassan-Ali in view of Eberle (U.S. Patent 7020161)

3. Regarding claim 1, Hassan-Ali teaches a network processor and method of hierarchical scheduling comprised of receiving data from one or more pipes; (Figure 12 element 1202 FID 8: [0058] read present invention first maps the [PHY, VPI, VCI] triplet to a unique number, called Flow ID (FID), which allows efficient storage and data structure representation.) selecting a winning pipe from the pipes from which to transmit data based upon quality of service parameters corresponding to the winning pipe; (Figure 12 element 1218-n [0071] read the L2 data structure accordingly contains "winner FID/TS" data from different subports.) selecting a pipe flow from the plurality of pipe flows included in the winning pipe based upon one or more quality of service parameters corresponding to the selected pipe flow; and transmitting data from the selected pipe flow using a bandwidth corresponding to the winning pipe flow. (Figure 12 element 1222 [0072] read the arbitration block 1220 is provided as a CoS-aware, TS-based Priority Round Robin (PRR) mechanism that is operable to select a winner FID 1222 based on service category as well as the time stamp data. Thus, the arbiter 1220 not only determines whether a cell with higher service priority is ready to be serviced in the current time slot i.e. using a bandwidth corresponding to the winning pipe flow, but it also attempts to send a cell having the lowest time stamp as compared to a global time variable).

4. However, Hassan-Ali does not teach of transmitting data from the selected pipe flow using a bandwidth corresponding to the winning pipe flow.

5. Eberle teaches of transmitting data from the selected pipe flow using a bandwidth corresponding to the winning pipe flow. (5: [002] read [a] precalculated schedule can accommodate isochronous traffic e.g. winning pipe flow, by allocating the necessary connection between an input and output port at intervals derived from the rate of the isochronous data stream. That way, an appropriate amount of switch bandwidth i.e. bandwidth corresponding to winning pipe flow can be reserved.)

6. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the hierarchical scheduling teachings of Hassan-Ali to transmitting data from the selected pipe flow using a bandwidth corresponding to the winning pipe flow.

7. Using a bandwidth more then that corresponding to the winning pipe flow would waste bandwidth resources while using a bandwidth corresponding less then that corresponding to the winning pipe flow would be inefficient.

8. Regarding claim 3, Hassan-Ali teaches of selecting a winning pipe from the one or more pipes from which to transmit data based upon one or more quality of service parameters corresponding to the winning pipe includes writing data identifying a pipe to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the pipe and scanning the group of memory addresses to find data identifying a pipe. (7: [0061] read queue manager 812 provides the FIDs stored in a connection memory 814 to a subport scheduler 822 which performs hierarchical scheduling, detailed below, so as to manage traffic shaping and flow routing to elect most eligible connections to send the cells across the fabric.) .

9. In consideration of claims 4, Hassan-Ali teaches of rewriting data identifying the winning pipe to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the winning pipe. (7: [0061] read A scheduler RAM 823 inserts FIDs i.e. winning pipe in the subport scheduler's priority queues i.e. memory address, based on such parametrics as the cell's theoretical arrival time (TAT) i.e. quality of service parameter).

10. In consideration of claims 5 – 6, Hassan-Ali teaches of writing data identifying a pipe flow to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the pipe flow; scanning the group of memory addresses to find data identifying a pipe flow; writing the identified pipe flow in a queue corresponding to the winning pipe based upon one or more quality of service parameters corresponding to the selected pipe flow; and selecting the identified pipe flow from the queue corresponding to the winning pipe. (7: [0061] read queue manager 812 provides the FIDs stored in a connection memory 814 to a subport scheduler 822 which performs hierarchical scheduling, detailed below, so as to manage traffic shaping and flow routing to elect most eligible connections to send the cells across the fabric. 7: [0061] read A scheduler RAM 823 inserts FIDs i.e. winning pipe in the subport scheduler's priority queues i.e. memory address, based on such parametrics as the cell's theoretical arrival time (TAT) i.e. quality of service parameter)

11. Claims 7 – 10, 12 – 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hassan-Ali et al (U.S. Patent Application Publication 2004/0081167), hereafter Hassan-Ali as applied to claims 1-6, 10 above, in view of Eberle (U.S. Patent 7020161) and further in view of Hassan-Ali et al (U.S. Patent Application Publication 2004/0081157) hereafter Hassan-Ali2.

12. With regards to claims 7, 10, 16 and 18, Hassan-Ali modified by Eberle, teaches a network processor and method for hierarchical scheduling comprised of receiving data identifying a pipe flow, the pipe flow included in a pipe, and writing data regarding the pipe to a

first calendar. (9: [0075] Note Hassan-Ali teaches of a first calendar heap data structure and references Hassan-Ali2).

13. However, Hassan-Ali does not teach of writing data regarding the pipe flow to a second calendar; scanning the second calendar for a winning pipe flow; writing the winning pipe flow to a corresponding pipe queue; and transmitting data from the selected pipe flow.

14. Hassan-Ali2 teaches an efficient sorting method for sorting time stamps (TS) from values using a hybrid calendar heap by creating a hierarchical three level search. (5: [0044] and Figure 5). By partitioning the TS data in such a structure, the sorting can be efficiently achieved.

15. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the hierarchical scheduling method of Hassan-Ali to two sort levels; the pipe in a first, higher level calendar, with the pipe flow in the lower level calendar and then use the hybrid calendar heap scheme taught by Hassan-Ali2 to sort for the winning pipe flow, which subsequently is transmitted.

16. Such a modification would improve the efficiency of the scheduler with selection made by a fast, efficient hierarchical tree structure for identifying candidate pipe flows within a pipe, thus improving the data throughput and making the system more economical.

17. Regarding claims 8 – 9, 20 – 21 the Hassan-Ali2 modification teaches of rewriting data regarding the winning pipe flow to the second calendar and the winning pipe to the first calendar. (4: [0040]).

18. Regarding claims 12 and 19 the hierarchal scheduler logic of the Hassan-Ali2 modification teaching would treat the autonomous flows as a pipe with a single pipe flow enqueue and new attach logic for scheduling at least one of an autonomous flow and a pipe flow to be serviced; and dequeue and reattach logic for selecting at least one of an autonomous flow and a pipe flow to be serviced. (Figure 12, Hassan-Ali2 4: [0039,0040])

19. Regarding claim 13, the Hassan-Ali2 modification teaches that the scheduler logic is adapted to transmit data from the selected pipe flow using a bandwidth corresponding to the winning pipe flow (Figure 12) and write data identifying a pipe to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the pipe and scanning the group of memory addresses to find data identifying a pipe and a winning pipe. (9: [0070], [0071], [0072] and Figure 12).

20. Regarding claim 14, Hassan-Ali teaches of selecting a winning pipe from the one or more pipes from which to transmit data based upon one or more quality of service parameters corresponding to the winning pipe includes writing data identifying a pipe to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the pipe and scanning the group of memory addresses to find data identifying a pipe. (7: [0061] read queue manager 812 provides the FIDs stored in a connection memory 814 to a subport scheduler 822 which performs hierarchical scheduling, detailed below, so as to manage traffic shaping and flow routing to elect most eligible connections to send the cells across the fabric.)

21. In consideration of claims 15, Hassan-Ali teaches of rewriting data identifying the winning pipe to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the winning pipe. (7: [0061] read A scheduler RAM 823 inserts FIDs i.e. winning pipe in the subport scheduler's priority queues i.e. memory address, based on such parametrics as the cell's theoretical arrival time (TAT) i.e. quality of service parameter).

22. In consideration of claims 17, Hassan-Ali teaches of writing data identifying a pipe flow to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the pipe flow; scanning the group of memory addresses to find data identifying a pipe flow; writing the identified pipe flow in a queue corresponding to the winning

pipe based upon one or more quality of service parameters corresponding to the selected pipe flow; and selecting the identified pipe flow from the queue corresponding to the winning pipe. (7: [0061] read queue manager 812 provides the FIDs stored in a connection memory 814 to a subport scheduler 822 which performs hierarchical scheduling, detailed below, so as to manage traffic shaping and flow routing to elect most eligible connections to send the cells across the fabric. 7: [0061] read A scheduler RAM 823 inserts FIDs i.e. winning pipe in the subport scheduler's priority queues i.e. memory address, based on such parametrics as the cell's theoretical arrival time (TAT) i.e. quality of service parameter).

Conclusion

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Henry Baron whose telephone number is (571) 270-1748. The examiner can normally be reached on 7:30 AM to 5:00 PM E.S.T. Monday to Friday.

24. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

25. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. B./
Examiner, Art Unit 2616

/Seema S. Rao/

Supervisory Patent Examiner,
Art Unit 2616

HB